State of Rhode Island
Department of Environmental Management

Office of Air Resources

Rhode Island Motor Vehicle Inspection/Maintenance Program

Biennial Report
Calendar Years 2012 – 2013
"Data Analysis and Reporting"

submitted
to the

U.S. Environmental Protection Agency (EPA)

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Appendices

1. Introduction

The Rhode Island Motor Vehicle Inspection/Maintenance (I/M) Program was implemented in January of 2000. A Biennial Report to the EPA is required under 40 CFR § 51.366(e)(1)(2) "Data Analysis and Reporting", Inspection/Maintenance Program Requirements. This report has been developed to comply with that requirement for the reporting period of calendar years 2012-2013.

The report includes any changes that were made within the Rhode Island Motor Vehicle Inspection/Maintenance Program within the calendar years 2012-2013, in the program design, funding, personnel levels, procedures, program authority legislation and regulations, any weaknesses or problems identified in the program, and what action has been taken by the Department of Motor Vehicles (DMV) and the Department of Environmental Management (DEM) to correct and improve any problems within the I/M Program.

2. Program Design

During 2012-2013, there were no changes made in the program design of Rhode Island's Inspection Program. The Rhode Island I/M Program is a decentralized program that requires a biennial inspection for emissions and safety of vehicles in a test-and-repair system of all gasoline and diesel powered light duty vehicles and light duty trucks, 25 years old and newer, up to 8,500 pounds gross vehicle weight rating (GVWR). Vehicles over 25 years of age are required to undergo inspection, however, the results relating to emissions are advisory and compliance with the standards is voluntary. Vehicles less than two years old, with fewer than 24,000 miles, are also exempt from the inspection requirements.

All model year (MY) 1996 and newer vehicles are tested using on-board diagnostic (OBD) testing including diesel vehicles equipped with OBD. Vehicles older than MY1996 are tested using a mass measurement dynamometer test (NYTEST with BAR31 trace). Those vehicles that cannot be OBD tested or tested on a dynamometer are tested using a two-speed idle test. Diesel vehicles that can be tested on a dynamometer are tested with a steady-state opacity test. Gas cap integrity tests are conducted on all MY 1995 and older non-OBD vehicles.

During 2012, there were 291 active Authorized Inspection Repair Stations (AIRS) in the network. During 2013, there were 290 active AIRS in the network, throughout the state. The number of AIRS has remained steady during the duration of the program, ranging from 287-294 stations throughout the state.

3. Funding

During 2012-2013, there were no changes made in the program funding for the Rhode Island Motor Vehicle Inspection/Maintenance Program. The inspection fee is $39. The fees collected provide for the cost of the inspection, the costs of administering the motor vehicle emissions inspection program and other costs provided by law. The fee must be paid for each motor vehicle inspected at an

AIRS at the time of the inspection and is payable whether a compliance certificate, waiver certificate, or no certificate is issued. There is no fee charged for one re-inspection of a vehicle that failed an initial inspection when the re-inspection is conducted within 30 days at the same AIRS that conducted the initial inspection. (see Appendix "A" Rhode Island Motor Vehicle Inspection Fee)

The following is a breakdown of the distribution of the fee:

- $19 Retained by the AIRS to cover the cost of performing the inspection.

- $16 Deposited in the state general fund, and the general assembly annually appropriates such sums as may be required to cover the costs of administering the program by DMV and DEM.

- $4 Retained by Systech International, Inc., the Program Manager for overseeing the I/M Program.

4. Personnel Levels

During 2012-2013, staffing levels for (DEM) remained the same with (1) Supervising Air Quality Specialist and (1) Air Quality Specialist.

During 2012, staffing levels for the DMV inspection office was increased by (1) inspector.

During 2013, the staffing levels for DMV was increased by (1) office clerk in the inspection office.

Staffing levels for Systech International, Inc., remained the same during 2012 with (1) Principal President, (1) Vice President of Operations, (1) Program Manager, (2) Software Engineers, (1) Auditor, (2) Field Service Technicians, and (1) Office Manager.

During 2013 Systech International hired an additional covert vehicle auditor to conduct the covert vehicle audits.

During 2013, Systech assigned a new Program Manager to oversee the Rhode Island Motor Vehicle Inspection/Maintenance Program, due to the present Program Manager being re-assigned to the New York Inspection/Maintenance Program.

5. Procedures

During 2012-2013, the testing procedures remained the same in Rhode Island's de-centralized test and repair I/M Program for gasoline and diesel powered light-duty vehicles and light duty trucks, 25 years old and newer, up to 8,500 pounds GVWR. The emission inspection procedures are performed at the (AIRS) on RI 2007 emission analyzer systems that automatically select the applicable test for

the inspection of each vehicle. Factors such as model year, fuel type, vehicle type, and others aid the software in determining its choice of emissions test for the vehicle being tested. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

During 2012-2013 the Program Manager and their Information Technology (IT) staff continued to work with DMV and DEM to upgrade and beta test newer versions of the workstation software in order to continue to improve the emissions testing.

All MY1996 and newer vehicles are tested using an (OBD) test including OBD diesel vehicles. Vehicles older than MY1996 are tested using a mass measurement dynamometer test (NYTEST with BAR31 trace). Those vehicles that cannot be OBD tested or tested on a dynamometer are tested using a two-speed idle test (TSI). Non-OBD diesel vehicles are tested with a steady-state opacity test (if they can be tested on a dynamometer). The gas cap integrity tests are conducted on all MY1995 and older non-OBD vehicles.

The vehicles over 25 years of age are required to undergo inspection, however, the results relating to emissions are advisory and compliance with the standards is voluntary. Vehicles less than two years old, with fewer than 24,000 miles, are exempt from the inspection requirements. (see Appendix "C" DMV Safety and Emissions Control Regulation No. 1, section 1.3.)

The following is a description of the different emissions tests:

OBD II (On-Board Diagnostics)

The OBD II connector link is provided for inspection for all model year MY1996 and newer vehicles, and MY 1997 and newer diesel vehicles under 8,500 GVWR. During OBD II inspections, the OBD II link is connected to the vehicle's diagnostic link connector (DLC) to obtain the vehicles status. The RI 2007 analyzer software includes a DLC locator tool with extensive information and vehicle-specific photos to assist the technician in locating the DLC on different vehicles. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

Dynamometer Test (Transient)

Vehicles older than MY 1996 are tested using a mass measurement dynamometer test (NYTEST with BAR31 trace). The dynamometer inspection consists of driving the vehicle on the dynamometer, following the speed trace on the analyzer screen with the tailpipe test probe in the exhaust and the VMAS 4" exhaust tube and conical collector in place. Two conditioning cycles are performed to warm up the vehicle and then a test cycle is performed where the exhaust gas is measured. The RI2007 dynamometer test measures hydrocarbon (HC), carbon monoxide (CO), carbon dioxide (CO_2), and oxides of nitrogen (NO_x) emissions to ensure a valid exhaust gas sample and to determine the pass/fail status of the vehicle in the loaded mode. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

Two-Speed Idle (TSI)

A TSI test is required on vehicles that are not subject to an OBD II test or a dynamometer inspection; such as a four wheel drive vehicle or a vehicle with traction control.

The TSI inspection consists of one or more test modes performed at a designated engine speed. For example, the typical TSI test will include one mode performed at a higher RPM (around 2500) for a certain number of seconds, followed by another mode performed at a lower RPM (around 1100) for a certain number of seconds. Depending on the exact vehicle and the result of each mode, the TSI inspection will vary. For example, it may include an additional high speed mode to condition a vehicle, or it may include a key-off sequence on certain makes/models of vehicles. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

The RI2007 TSI test measures hydrocarbon (HC), carbon monoxide (CO) and carbon dioxide (CO_2) emissions to ensure a valid exhaust gas sample to determine the pass/fail status of the vehicle. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

Diesel Opacity

The diesel opacity test consists of a dynamometer test where the vehicle is brought up to speed and maintained at a constant speed until the opacity test is performed. The RI2007 diesel opacity test measures the opacity (density) of the smoke in the exhaust with the vehicle at speed and loaded by operating on the dynamometer. (see Appendix "B" SysTech RI Vehicle Inspection Program Operator's Manual)

Gas Cap Integrity Test

The gas cap integrity test is conducted on all non-OBD vehicles (that is MY1995 and older). The gas caps are subjected to an initial system pressure of 30±1 inches of water. Gas caps with a leak rate of less than or equal to 60 cubic centimeters per minute will pass the gas cap integrity test. (see Appendix "D" DEM Air Pollution Control Regulation #34 Section 34.4.4)

Remote OBD Testing Pilot Program Approved by EPA

During September 2012, the EPA approved the OBD Testing Pilot Program in an effort to improve program effectiveness with the remote OBD testing units that was installed into the RI Verizon Fleet.

Remote OBD Testing Pilot Program Results

During January 2013, the Program manager completed the installation of 74 remote OBD testing units in the RI Verizon Fleet to begin to collect and analyze data for RI's pilot program for Program Effectiveness. The training and certification of the Verizon Inspectors were completed by the end of January.

The system is designed to notify the fleet operator whenever a diagnostic trouble code is stored in the onboard computer, even if that does not trigger a "MIL On" situation. As a result, the maintenance crew gets early notification that an emission related problem may be developing on a vehicle and can correct it before it blossoms into a full blown issue.

During 2013, there were 15,415 on road tests conducted using Remote OBD.

There were 28 vehicles identified with problems mostly before the "MIL" illuminated. The coolant thermostat problem identified last year continues to be an issue on some of these vehicles. Nine vehicles had the "MIL" commanded on and in eight of these cases the thermostat was the problem. Two vehicles also reported a problem with the evaporative system (loose gas cap) and one vehicle had a bad camshaft position circuit.

There were a total of 14 "MIL" On events among the nine vehicles that experienced problems in 2013. On average vehicles were repaired in less than two weeks after a "MIL On" event. Removing one vehicle that took a long time to repair, the average for the rest of the "MIL On" events to be repaired was six days. The median time to repair was less than three days, and this does not take into consideration repairs that were made in advance of the "MIL coming On". The fleet operator investigates whenever trouble codes appear and takes repair action as needed to address any emerging problems.

One of the major advantages of Remote OBD is it encourages quicker repairs than required by a periodic I/M program.

The Remote OBD program in Rhode Island is yielding significant air quality benefits compared to the standard period test program. Vehicles that experience "MIL On" events are repaired essentially immediately and vehicles experiencing problems are being diagnosed ahead of the problem reaching the "MIL On" stage. This means vehicles are being operated on the roads in a cleaner state than normal.

In 2014-2015, Opus Inspection proposes to further expand the Remote OBD program in Rhode Island to additional fleet vehicles and possibly some private vehicles.

6. Enforcement

During January 2013, the Division of the Law Enforcement/Criminal Investigation section of DEM contacted DEM and DMV to inform our agencies that the Rhode Island Attorney General was forming an Environmental Crimes Task Force, and is exploring the possibility of targeting the frequent offenders from the Authorized Inspection Repair Stations (AIRS) that have conducted fraudulent inspections. At the end of December 2013, there have not been any formal hearings.

During October 2013, DEM, DMV and Systech discussed implementing two additional informal enforcement programs in January 2014, as a result of the improper covert vehicle audits for safety and emissions inspections. The first program will be a Formal Counseling Program and the second program will be a Sticker Removal Program. Once these programs are implemented in January

2014, it will reduce the time period between the formal hearings conducted by the Safety & Emission Control Board and final corrective actions.

The DMV will conduct both of these informal enforcement programs at the Division of Motor Vehicles Safety and Emission Control Office in Providence, RI. The DMV will notify the responsible AIRS and inspector with proper documentation for the fraudulent vehicle inspection performed and will arrange a meeting for the AIRS and inspector to meet at the DMV Safety and Emission Control Office with the Acting Chief, where the technician can explain why an improper vehicle inspection was performed. The Acting Chief can then explain to the technician the rules and regulations pertaining to the violation so corrective action will be taken and will be corrected in the future.

If an inspection sticker has been issued by an inspector who has fraudulently inspected a vehicle, the DMV will remove the inspection sticker from the windshield of the vehicle and issue a "five-day notice and demand tag" that requires an inspection to be completed within five days. If the vehicle is not inspected properly within five days the vehicle will be suspended.

The results of the informal meeting will be filed in the AIRS and technicians file. If this situation happens again, they will be called in for a formal hearing with the Safety and Control Board Hearing.

7. Program Authority Legislation and Regulations

Neither the Program's authorizing legislation nor its regulations were amended in 2012 or 2013.

8. Weaknesses Identified in Program

Re-certification training for technicians is required biennially under 40 CFR § 51.367(b)(3) "Inspector Training and Licensing or Certification" Inspection/Maintenance Program Requirements.

Rhode Island technicians were due to complete their re-certification training during 2012, however, the Program Manager and their Information Technology (IT) staff worked with DMV and DEM from May thru December 2012, to develop and implement a convenient 24/7 on line website re-certification training program for the technicians to have access too.

During January through April 2013, the technicians began their two year re-certification training on-line with the new 24/7 on-line website. By the end of April 2013, there were 861 technicians re-certified. By the end of December 2013, there were a total of 1,158 CITs recertified.

DMV New Statewide Computer Implementation Delayed

During 2012-2013, the new statewide computer system implementation for DMV has continued to be delayed due to the complexity of the application and the

intricacy of data migration. This delay has impacted DMV by preventing them to implement the complete registration denial system through the computer system in order to obtain accurate data to determine the total of non-compliance vehicles in the program.

Registration Denial

The delay of the new DMV new statewide computer systems has delayed the registration denial process from being fully implemented and has prevented DMV and DEM from accessing and assessing registration records. However, the registration process being used presently by DMV has proved to be beneficial in the reduction of non compliance vehicles. The DMV receives data from the Program Manager when vehicles are inspected. Based on DMV records from previous inspections, a notice of action (notice) is mailed out to vehicle owners who have failed to obtain a vehicle inspection when due. The notice indicates the vehicle owner has 30 days to obtain an inspection before the vehicle's registration is suspended. At the end of 30 days, if the vehicle has not passed an inspection based on the daily data submission from the Program Manger, the registration is suspended in the DMV registration database. However, due to limitations in DMV's existing data management system, it is not possible to determine the day to day status of these notices. Additionally, it is not possible to know how many notices were mailed each day.

During 2012, there were approximately 43,286 outstanding notices at the end of December 2012.

During 2013, there were approximately 46,042 outstanding notices at the end of December 2013.

When the new statewide computer system is implemented in the future, this should allow DEM to track the actual number of notices mailed each day and to track the compliance status of these notices.

During August 2010, DMV relocated their headquarters to a larger location in Cranston, RI, in order to streamline the DMV transactions and to prepare for the implementation of the new statewide computer system. This new computer system was originally scheduled to be implemented by June 2010; unfortunately, DMV has experienced implementation delays due to the technical complexity of the application and the intricacy of data migration. However, progress continues to be made towards implementation during.

Heavy Duty Diesel Implementation Program

During 2012-2013, DMV has delayed the heavy duty diesel I/M implementation due a reduction in personnel.

Although, the heavy duty diesel program is not an EPA requirement, when the program is implemented it will help to reduce emissions.

Appendix "A"

Rhode Island Motor Vehicle Inspection Fee

Appendix "B"

SysTech Rhode Island Vehicle Inspection Program Operator's Manual

Appendix "C"

Division of Motor Vehicles Rhode Island Motor Vehicle Safety and Emissions Control Regulation No. 1

Appendix "D"

Department of Environmental Management Air Pollution Control Regulation No. 34 Rhode Island Motor Vehicle Inspection/Maintenance Program